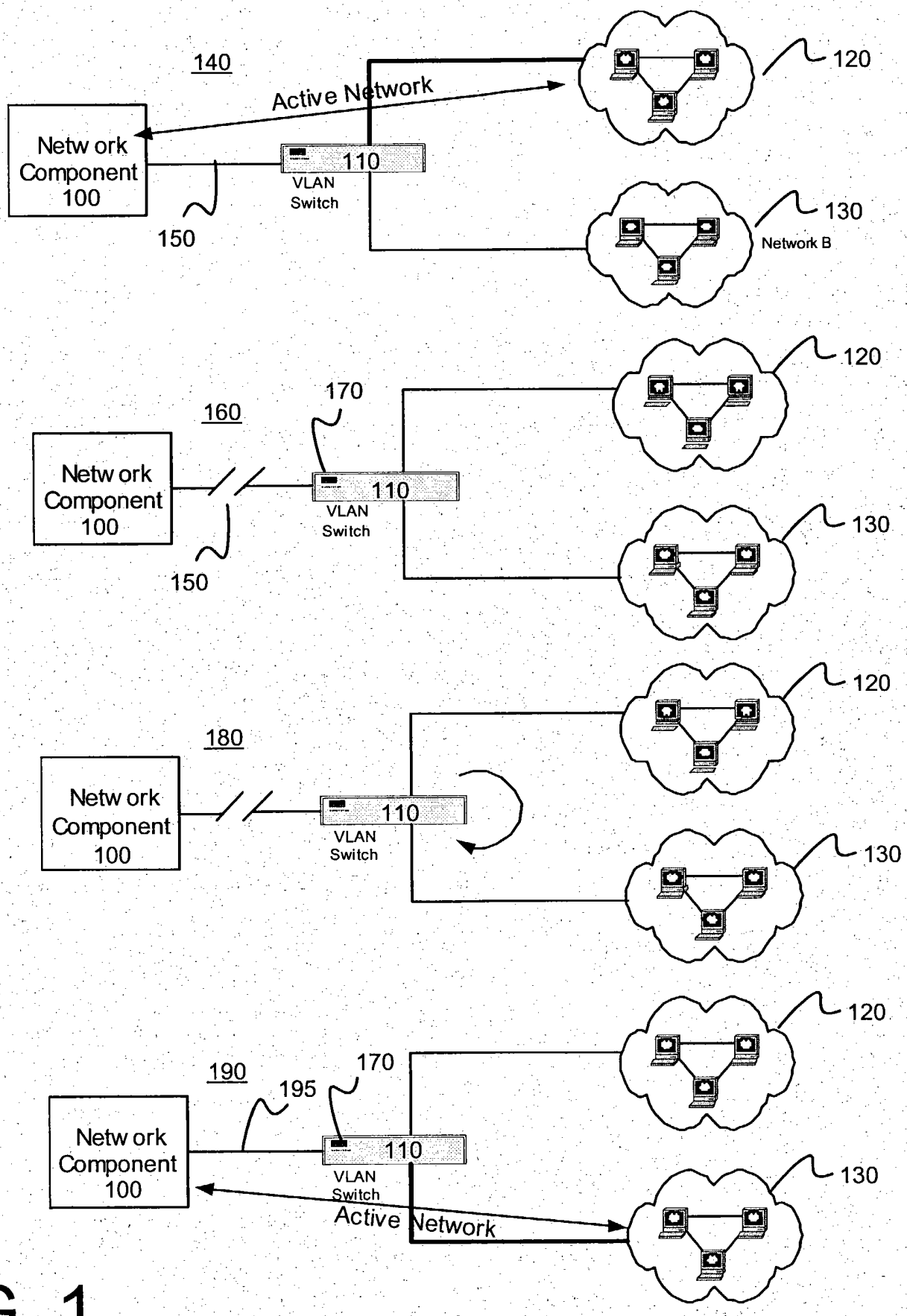
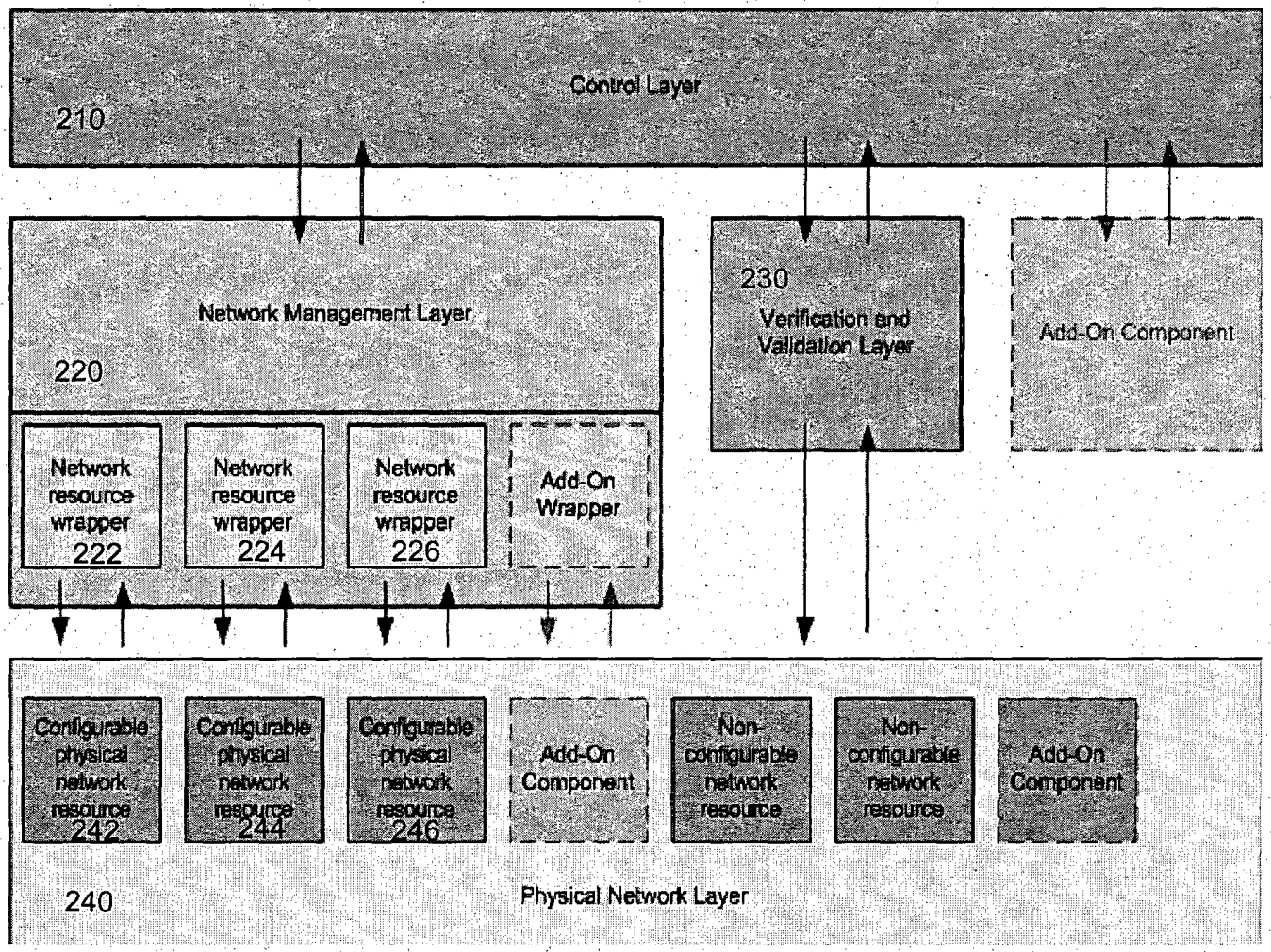
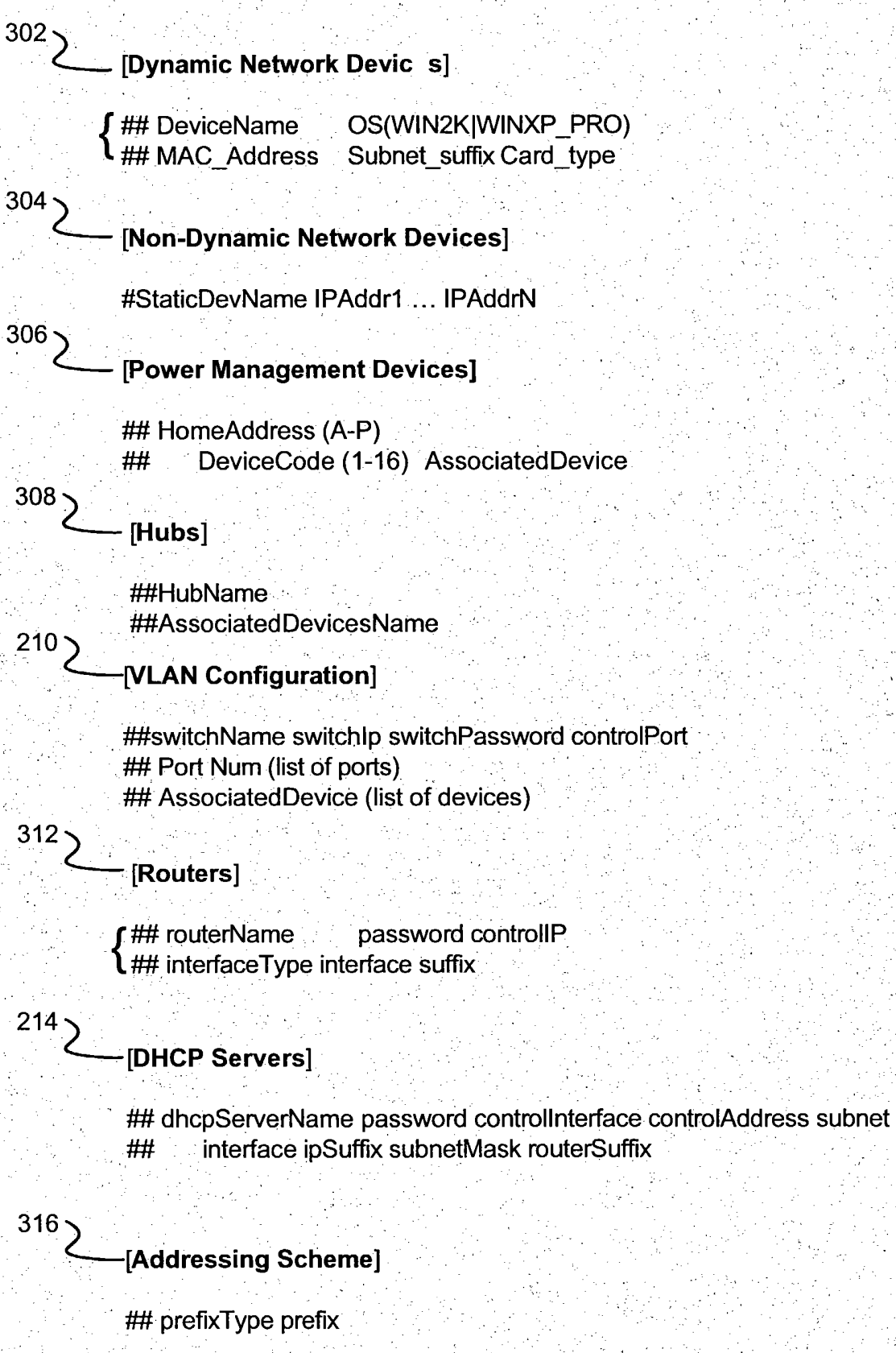

140
Active Network
120
Netw ork Component 100
110
VLAN Switch
150
130
Network B
160
170
180
190
195
Active Network

FIG. 1


Control Layer
210
Network Management Layer
220
230
Verification and Validation Layer
Add-On Component
Network resource wrapper 222
Network resource wrapper 224
Network resource wrapper 226
Add-On Wrapper
Configurable physical network resource 242
Configurable physical network resource 244
Configurable physical network resource 246
Add-On Component
Non-configurable network resource
Non-configurable network resource
Add-On Component
240
Physical Network Layer

200

FIG. 2


302
[Dynamic Network Devic s]
DeviceName OS(WIN2K|WINXP_PRO)
MAC_Address Subnet_suffix Card_type
304
[Non-Dynamic Network Devices]
#StaticDevName IPAddr1 ... IPAddrN
306
[Power Management Devices]
HomeAddress (A-P)
DeviceCode (1-16) AssociatedDevice
308
[Hubs]
##HubName
##AssociatedDevicesName
210
[VLAN Configuration]
##switchName switchIp switchPassword controlPort
Port Num (list of ports)
AssociatedDevice (list of devices)
312
[Routers]
routerName password controlIP
interfaceType interface suffix
214
[DHCP Servers]
dhcpServerName password controlInterface controlAddress subnet
interface ipSuffix subnetMask routerSuffix
316
[Addressing Scheme]
prefixType prefix

300

FIG. 3

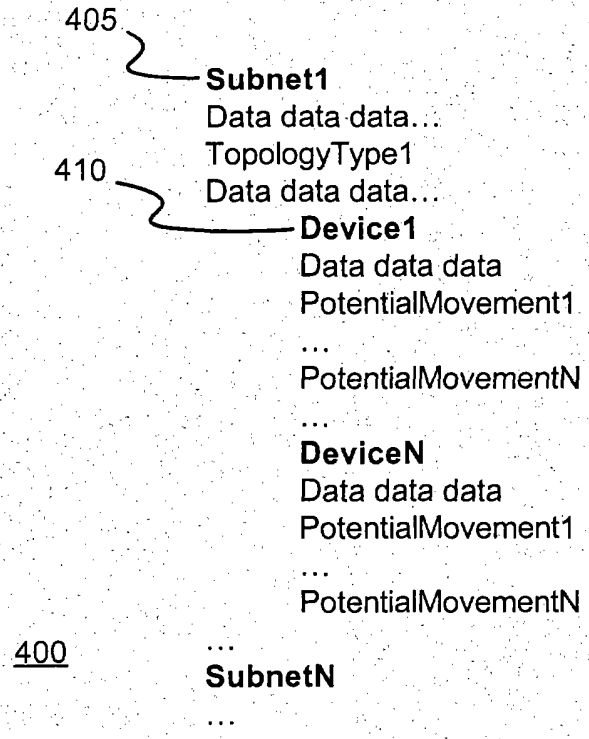

405
Subnet1
Data data data…
TopologyType1
410
Data data data…
Device1
Data data data
PotentialMovement1
…
PotentialMovementN
…
DeviceN
Data data data
PotentialMovement1
…
PotentialMovementN
400
…
SubnetN
…

FIG. 4

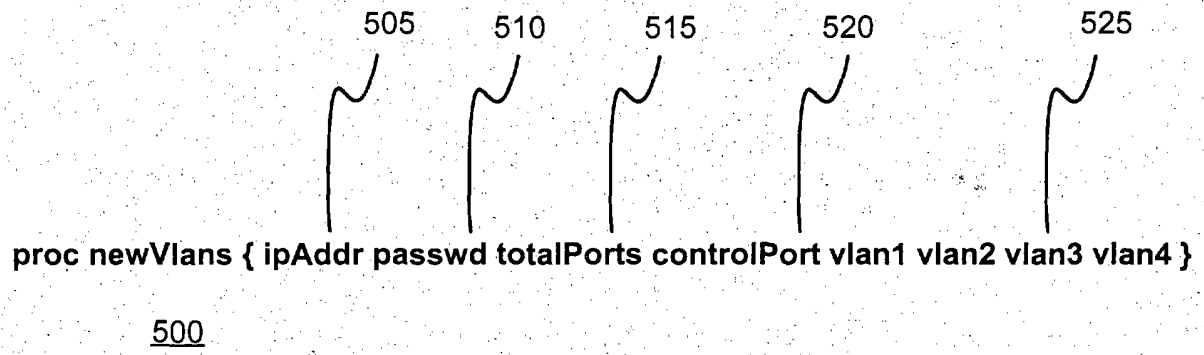

505
510
515
520
525
proc newVlans { ipAddr passwd totalPorts controlPort vlan1 vlan2 vlan3 vlan4 }
500

FIG. 5

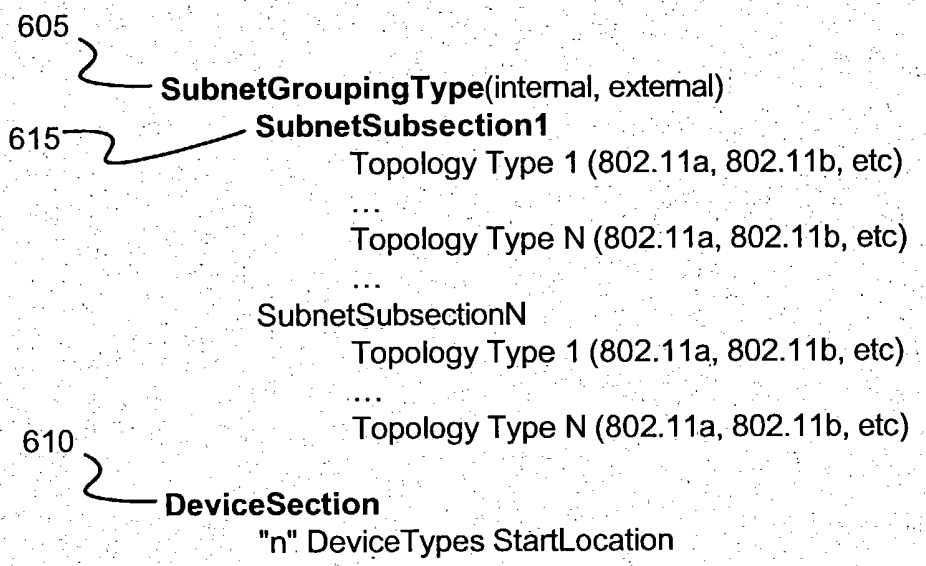

605
SubnetGroupingType(internal, external)
615
SubnetSubsection1
Topology Type 1 (802.11a, 802.11b, etc)
...
Topology Type N (802.11a, 802.11b, etc)
...
SubnetSubsectionN
Topology Type 1 (802.11a, 802.11b, etc)
...
Topology Type N (802.11a, 802.11b, etc)
610
DeviceSection
"n" DeviceTypes StartLocation
600

FIG. 6

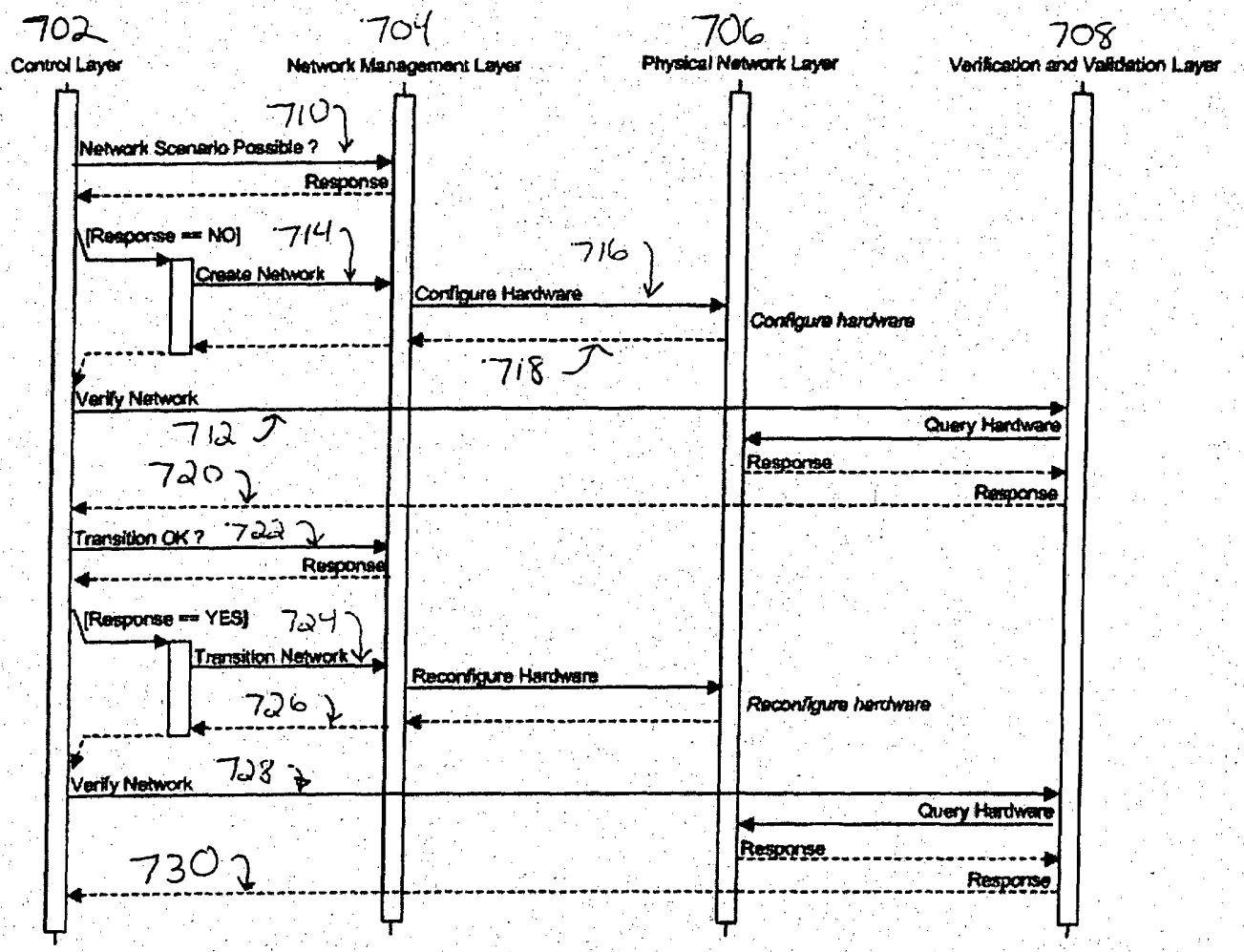

702
Control Layer
704
Network Management Layer
706
Physical Network Layer
708
Verification and Validation Layer
710
Network Scenario Possible ?
Response
[Response == NO]
714
Create Network
716
Configure Hardware
Configure hardware
718
Verify Network
712
Query Hardware
Response
720
Response
Transition OK ?
722
Response
[Response == YES]
724
Transition Network
Reconfigure Hardware
Reconfigure hardware
726
Verify Network
728
Query Hardware
Response
730
Response
700

FIG. 7

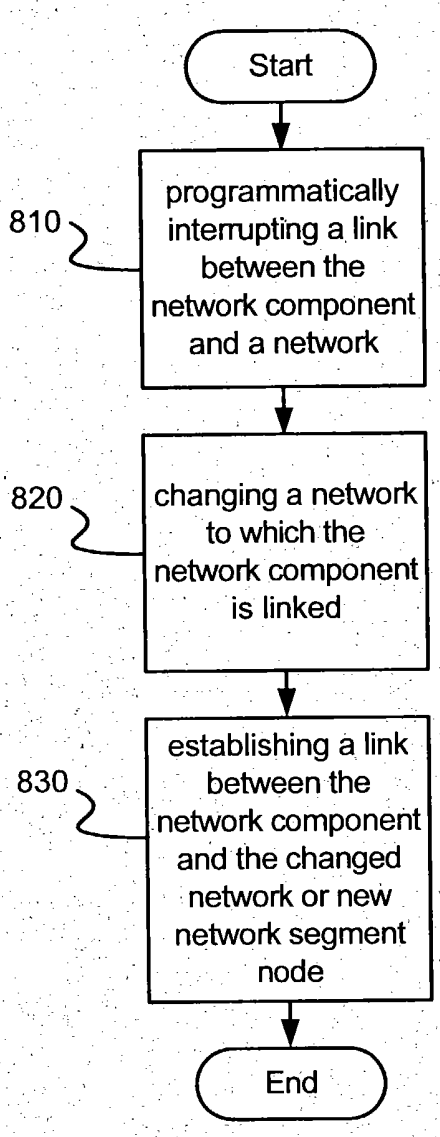

Start
programmatically interrupting a link between the network component and a network
810
changing a network to which the network component is linked
820
establishing a link between the network component and the changed network or new network segment node
830
End

FIG. 8

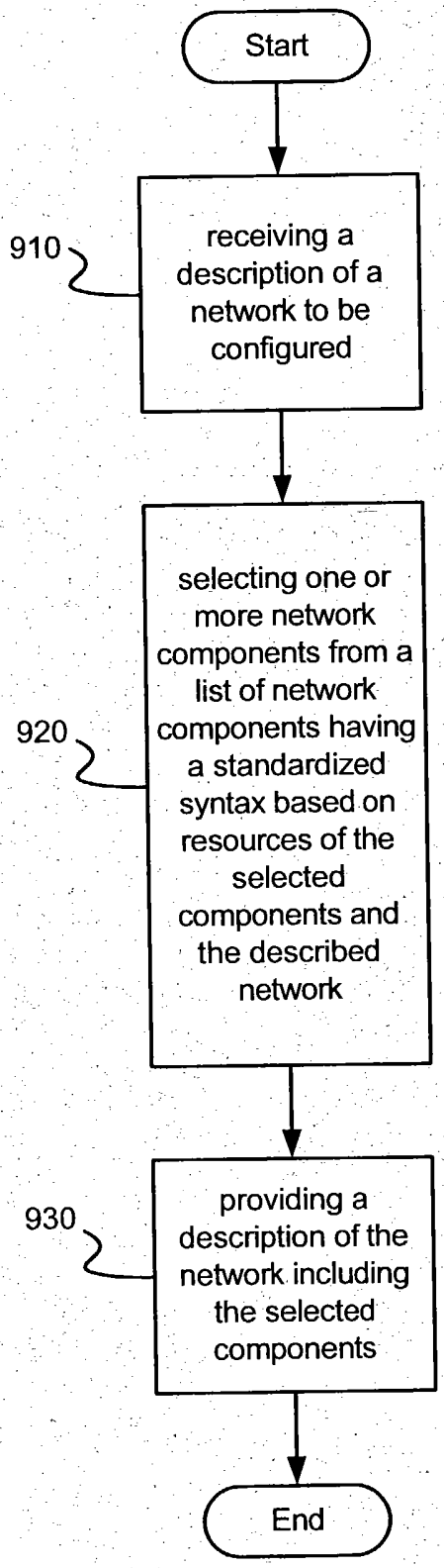

Start
910
receiving a description of a network to be configured
920
selecting one or more network components from a list of network components having a standardized syntax based on resources of the selected components and the described network
930
providing a description of the network including the selected components
End

FIG. 9

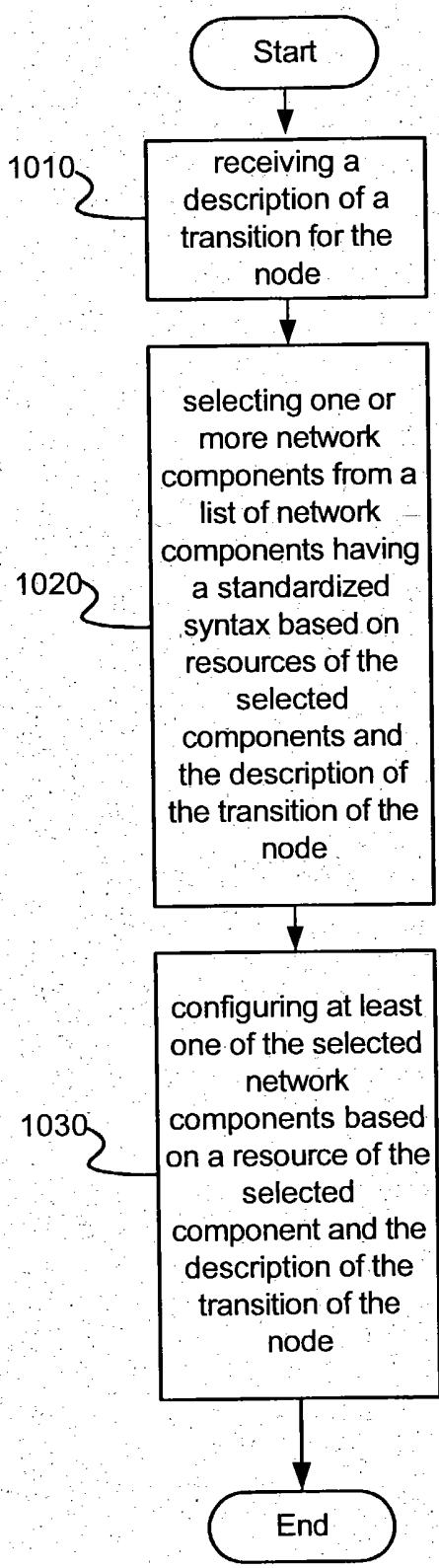

Start
1010
receiving a description of a transition for the node
selecting one or more network components from a list of network components having a standardized syntax based on resources of the selected components and the description of the transition of the node
1020
configuring at least one of the selected network components based on a resource of the selected component and the description of the transition of the node
1030
End

FIG. 10

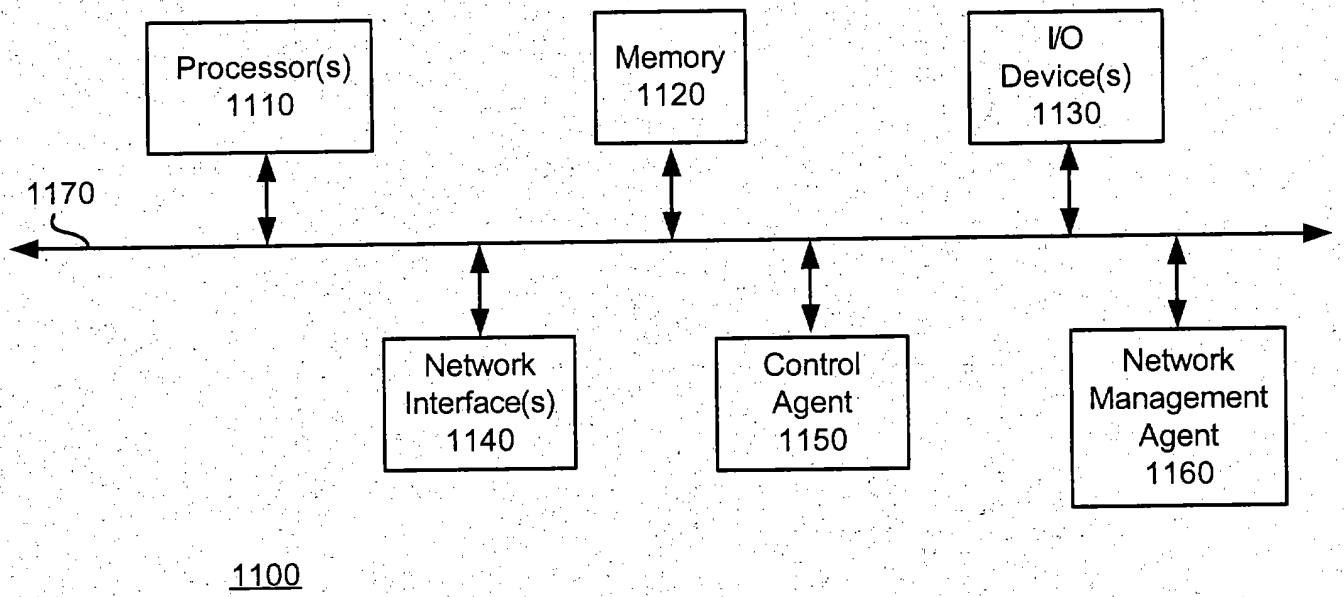

Processor(s)
1110
Memory
1120
I/O
Device(s)
1130
1170
Network
Interface(s)
1140
Control
Agent
1150
Network
Management
Agent
1160
1100

FIG. 11

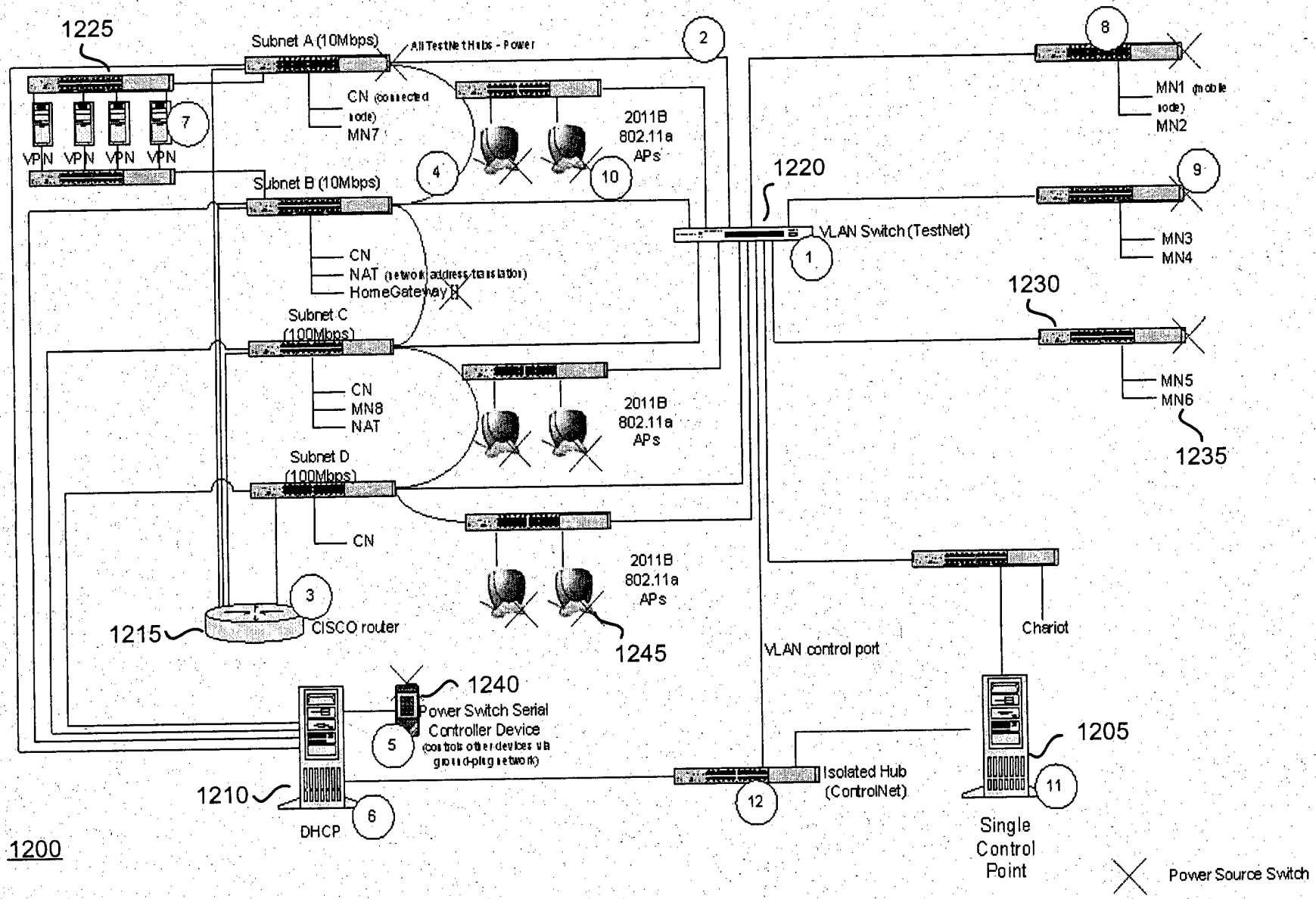

1225
Subnet A (10Mbps)
All TestNet Hubs - Power
2
8
MN1 (mobile node)
MN2
CN (connected node)
MN7
7
VPN VPN VPN VPN
2011B 802.11a APs
4
10
1220
Subnet B (10Mbps)
9
VLAN Switch (TestNet)
1
MN3
MN4
CN
NAT (network address translation)
HomeGateway II
1230
Subnet C (100Mbps)
MN5
MN6
1235
CN
MN8
NAT
2011B 802.11a APs
Subnet D (100Mbps)
CN
2011B 802.11a APs
3
1215
CISCO router
1245
VLAN control port
Chariot
1240
Power Switch Serial Controller Device
(controls other devices via ground-plug network)
5
1205
1210
DHCP
6
12
Isolated Hub (ControlNet)
11
Single Control Point
1200
Power Source Switch

FIG. 12